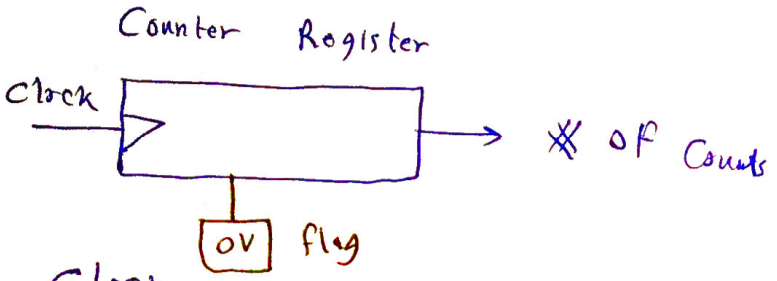
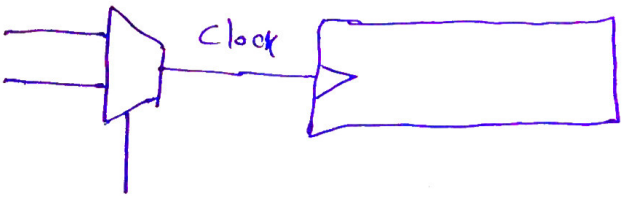
Timer / Counters

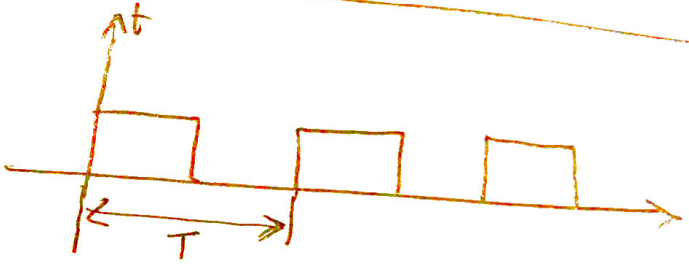


Clock → External Event → Counter

Clock → Internal/External osc. → Timer

External not supported in all micro controller





time = n T

n → # of Counts

Over Flow flag is vised when Counting up From FFH to 00H

Counter ← 256 - n

256 → 8-bit

n → Wanted number of Counts

Counter → Value in register

If we wants to Count number of event occurence we intetialize the Counter with 00H

Dealing with OV flag

1- check the OV flag Periodicaly (has many Cons.)

2- Using Interrupt (Timer Interrupt)

We need to reset OV flag in Software after Interrupt

in Software / hardware

1- We need to Know Clock Source

2- We need to know how to access the register

3- We need to know how to Configure it as Timer or Counter

Registers

1- Timer Register

2- Port For Clock (Counter)

3- Option Register (Timer / counter) (Internal / external)

4- Interrupt Register
   - Flag
   - Interrupt

optim register → Timer / Counter
- Timer mode
- Prescaler → For how number of osc. clock cycle we trigger the timer

timer 0 — 8-bit timer

timer 1 — 16 bit timer

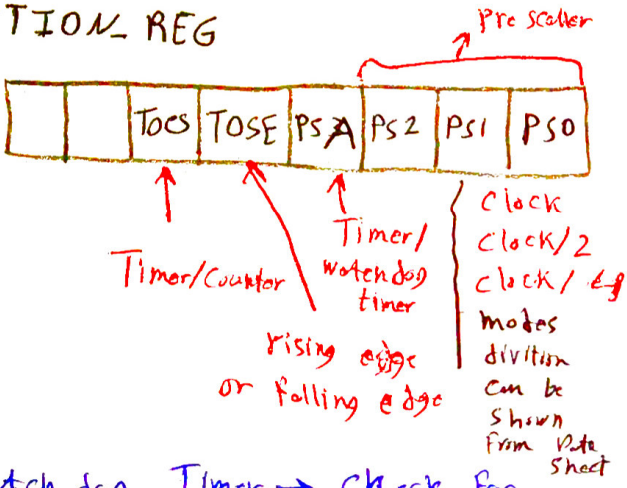
timer 2 — 8 bit timer

timer0

PIC

TMR0 : timer register

OPTION_REG



Watch dog Timer → check for failur or infinty Loop with no actions

INTCON : interrupt register

→ required to be 1 to Enable any Iterrupt

PEIE → Prephral interrupt → 1

TOIE → Timer Zero Interrupt Enable

TOIF → Timer Zero Interrupt Flag

Task

Push Button

2 LED

- one Led Blinking each 5 seconds
- other on When pressing Push Button

```
Void interrupt(void) {
    // check Flg
}
```